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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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William M. Lee, Jr.
Lee, Mann, Smith, McWilliams
Sweeney & Ohlson
P.O. Box 2786
Chicago, IL 60690-2786

EXAMINER

HARPER, VINCENT P

ART UNIT	PAPER NUMBER
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2654

DATE MAILED: 09/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

70

Office Action Summary

Application No.

09/881,441

Applicant(s)

KEANE ET AL.

Examiner

V. Paul Harper

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. All relevant objections are withdrawn as being satisfied.

Claim Objections

2. All relevant objections are withdrawn as being satisfied.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

3. Claim 11 rejected under 35 U.S.C. 102(e) as being anticipated by Lewis et al. (U.S. Patent 6,330,428), hereinafter referred to as Lewis.

Regarding claim 11, Lewis discloses an evaluation system that works with a test voice signal consisting of a plurality of different voice samples (column 3, lines 2-3; column 3, lines 18-21) being sent over a packet-based communications system (Fig. 1B) resulting in a modified voice signal that is compared with the original test voice signal (col. 3, lines 1-7), which corresponds to "a signal for a voice call provided over a

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packet-based communications network, said signal comprising a plurality of packets at least one of which comprise test voice information for comparison at a node with stored test voice information which is the same as the test voice information.”

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3, 7, 8, 14, 16, 17, 18, 19, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis in view of Tschudin (“Header hopping and packet mixers,” Ninth Conference on Computer Communications and Networks, 2000. Proceedings, Oct. 2000).

Regarding claims 1, Lewis discloses a voice quality performance evaluator and method of operation in conjunction with a packet based communication network (column 1, line 26-27). Lewis’s system comprises: a first and second voice terminal connected to separate nodes on a packet data network (Fig. 1B); a node in a packet network receiving the original voice sample (column 3, lines 1-3), which corresponds to “(i) receiving packets for the voice call ”; a transmission path to the second node (column 3, line 2-3), which corresponds to “(ii) forwarding the packets to the second

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node”; processing circuitry that receives the modified voice sample via the interface from the voice transmission path under test and compares the original voice sample to the modified voice sample to evaluate the quality of the transmission path (column 3, lines 3-8), which corresponds to “(iii) at the second node, accessing the stored test voice information at the second node and comparing it with the test voice information received in the packets using a speech quality assessment algorithm in order to obtain a measure of speech quality for the voice call.” However, Lewis fails to specifically disclose “adding at least part of the stored test voice information to at least some of the packets.” However, the examiner contends that the concept of mixing signals such as normal voice and voice test signals was well known in the art, as taught by Tschudin.

Tschudin describes a steganographic protocol for packet switched networks where hidden information can be added to normal meassages (abstract).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Lewis to allow testing and normal voice communication to proceed simultaneously by the use of steganographic techniques, for the purpose of having an ongoing evaluation of speech quality.

Regarding claim 3, Lewis in view of Tschudin disclose everything claimed as applied above (see claim 1), in addition, Lewis describes the use of voice communications over packet data networks such as the Internet (column 1, lines 26-28), which corresponds to “said packet-based communications network is an internet protocol communications network.”

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Regarding claim 7, Lewis in view of Tschudin disclose everything claimed as applied above (see claim 1), in addition, Tschudin teaches the use of a tags in packets to identify packets that contain valid data (pg 316, introduction, paragraph two), which corresponds to "identifying which of the packets comprise test voice information by determining whether a pre-specified identifier is present in a header of each of the packets."

Regarding claim 8, Lewis in view of Tschudin disclose everything claimed as applied above (see claim 7), in addition, Tschudin teaches the use of a tags in packets to let only the intended receiver recognize the packets that contain valid data (pg 316, introduction, second paragraph), which corresponds to "forwarded from the first node to the second node via one or more other nodes which do not have access to information about the pre-specified identifier."

Regarding claim 14, Lewis discloses a packet-based system capable of measuring speech quality (Fig. 1B). In addition, Lewis's system includes: a node for receiving voice (158), which corresponds to "(i) an input arranged to receive packets for the voice call; processing circuitry for retrieving voice samples that will eventually be coded and transmitted on the network (column 6, lines 38-47, Fig. 2, (202), which corresponds to "(ii) a processor arranged to add test voice information to one or more of the packets; an output (304) that directs data over a packet switched network (302) to a destination (312); which corresponds to an output arranged to forward the packets towards the called party. However, Lewis fails to specifically disclose the use of the system during an ongoing voice call between two parties. However, the examiner

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contends that the concept of mixing signals such as normal voice and voice test signals was well known in the art, as taught by Tschudin.

Tschudin describes a steganographic protocol for packet switched networks where hidden information can be added to normal messages (abstract).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Lewis to allow testing and normal voice communication to proceed simultaneously by the use of steganographic techniques, as taught by Tschudin, for the purpose of having an ongoing evaluation of speech quality.

In addition, Lewis teaches the comparison of an original voice sample with a modified sample to evaluate the performance of the voice transmission path (col. 3, lines 3-8), which corresponds to "for comparison of the test voice information with the stored test voice information of the called party to provide a measure of said speech quality."

Regarding claims 19 and 20, claims 19 and 20 are rejected for the same reasons given above in claim 14; in addition, Lewis teaches the transmission of test data over a communications network where the receiving node performs a performance evaluation (col. 2, line 60 – col. 3, line 8), which corresponds to "(iv) at the called party node extracting the received test voice information and comparing it with stored test voice information at said called party node to provide a measure of said speech quality."

Regarding claims 16, 18, and 21, they are interpreted and rejected for the same reasons as set forth above in the rejection of claims 1 and 14. In addition, Lewis teaches the use of an input decoder (312) for receiving packets from a packet-based

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communications network, which corresponds to "an input arranged to receive packets"; stored original samples at the point of evaluation (402), which corresponds to "stored test voice information at the node"; and processing circuitry (202) that performs a comparison and a speech quality evaluation (Fig. 4), which corresponds to "a processor arranged to compare the received test voice information and the stored test voice information using a speech quality assessment algorithm in order to obtain a measure of speech quality for the voice call."

Regarding claim 17, the limitations given here are the same as those given in claims 14 and 16 and are rejected for the same reasons.

5. Claims 4, 9, 10, 22, and 23, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis in view of Tschudin, and further in view of well known prior art (MPEP 2144.03).

Regarding claim 4, Lewis in view of Tschudin disclose everything as applied above (see claim 1). However, Lewis in view of Tschudin do not specifically teach the use of real-time protocol packets. However, the examiner takes official notice of the fact that the use of real-time transport protocol for the transmission of sounds over an IP network was well known in the art.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Lewis in view of Tschudin by using the real-time transport protocol when exchanging real-time data such as sounds between nodes in a network so as to adhere to a standard protocol.

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Regarding claim 9, Lewis in view of Tschudin disclose everything claimed as applied above (see claim 1); Lewis's Fig. 3 and the summary of the invention (column 2, lines 61-67, column 3 lines 1-11) suggest that the sending and receiving nodes could be located at separate locations; however, Lewis in view of Tschudin do not explicitly state that the first and second nodes are located at the edge of the network. However, the examiner takes official notice of the fact that the separation of the nodes for the purpose of testing was well known in the art.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Lewis in view of Tschudin by duplicating the voice quality performance evaluator and locating separate evaluators at distance locations across a network, as an alternative way of determining voice quality between points on the network.

Regarding claim 10, Lewis in view of Tschudin disclose everything as applied above (see claim 1). However, Lewis in view of Tschudin do not specifically teach the use of the PESQ algorithm for speech quality assessment. However, the examiner takes official notice of the fact that the use of the PESQ algorithm for the evaluation of speech quality was well known in the art.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Lewis in view of Tschudin by using the PESQ algorithm to evaluate speech quality so as to use a widely accepted standard for evaluating speech quality.

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Regarding claims 22 and 23, Lewis in view of Tschudin disclose everything as applied above (see claim 21 and 20, respectively). However, Lewis in view of Tschudin do not specifically teach the storage of a computer program on a computer readable medium. However, the examiner takes official notice of the fact that the use of computer readable medium was well known in the art.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Lewis in view of Tschudin by storing the computer program on computer readable medium for the purpose of loading the program as needed.

6. Claims 2, 5, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis in view of Tschudin and further in view of Petitcolas et. al., ("Information Hiding—A Survey" Proceedings of the IEEE, Vol. 87, No. 7, July 1999), hereinafter referred to as Petitcolas.

Regarding claims 2, 5, and 15, Lewis in view of Tschudin disclose everything claimed as applied above (see claims 1 and 14, respectively); however Lewis in view of Tschudin do not specifically describe the identification of voice packets where speech is absent and the adding of voice test information to those packets. However, the examiner contends that the concept of identifying packets where speech is absent is consistent with the technique of identifying residual bandwidth for the purpose of storing hidden information there, as taught by Petitcolas.

Petitcolas teaches the use of suitable coding techniques to exploit residual bandwidth (pg. 1067, section D).

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Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Lewis in view of Tschudin by using the residual bandwidth available in packets where speech is absent, as an efficient technique for combining signals.

Regarding claim 5, Lewis in view of Tschudin and further in view of Petitcolas disclose everything as applied above (see claim 2). In addition, Tschudin teaches the modification of packet headers of the packets that contain hidden information (abstract, and the first and second paragraphs of the introduction), which corresponds to "making an indication in a header of each of those packets to which test voice information is added."

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis in view of Tschudin and Petitcolas, and further in view of well known prior art (MPEP 2144.03).

Regarding claim 6, Lewis in view of Tschudin and Petitcolas disclose everything as applied above (see claim 5). In addition, Tschudin teaches the hiding of information in a packet header (pg 316, first paragraph of the introduction), which reads "said indication is a payload value." However, Lewis in view of Tschudin and Petitcolas do not specifically teach the use of real-time transport protocol packets. However, the examiner takes official notice of the fact that the use of real-time transport protocol for the transmission of sounds over an IP network was well known in the art.

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Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Lewis in view of Tschudin and Petitcolas, by using the real-time transport protocol when exchanging real-time data such as sounds between nodes in a network so as to adhere to a standard protocol.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis in view of Tschudin and of Petitcolas.

Regarding claim 12, Lewis discloses everything claimed as applied above (see claim 11), in addition, it is rejected for the same reasons given above for claims 1 and 2.

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis in view of well known prior art (MPEP 2144.03).

Regarding claim 13, Lewis discloses everything as applied above (see claim 11), in addition, it is rejected for the same reasons given above for claim 4.

Response to Arguments

Applicant's arguments filed on July 22, 2002 have been fully considered but they are not persuasive.

10. Applicant asserts on page 9:

Lewis teaches a system which sends voice and test data on different calls. This means it is likely that the voice and test data do not travel the same way and as such do not suffer the same impacts from the network.

Lewis teaches the use of a voice quality performance evaluator where voice samples are sent over a transmission path and compared with an original voice sample stored in a evaluation unit (abstract, col. 2 line 61-col. 3, line 6).

Tschudin teaches the mixing of unrelated packets with tagged data (p. 316, "Introduction"). Lewis in combination with Tschudin teach a system where voice and test data are sent together over the network; and hence, the voice and test data both experience the same impact.

11. Applicant continues on page 9:

There is no stored test voice information at each node/terminal in the network. As such Lewis cannot give an accurate measure of the speech quality of a specific call in the network and suffers from many of the drawbacks identified in the introduction of the present application.

Lewis teaches the use of two voice terminals (158) (154) (Fig. 1B) each connected as a node to a packet data network (156). A voice sample from one terminal is transmitted over the network and received at the second terminal where a comparison is made in a voice quality performance evaluator with a copy of the original voice sample (col. 2, line 61 – col. 3, line, 7). The voice quality performance evaluator (152) has discrete components for transmission, storage and evaluation (Fig. 3). In this case, it would have been well known in the art to make these components separable (In re Dulberg, 289 F.2d 522, 523, 129 USPQ 348, 349 (CCPA 1961)) and to duplicate this functionality at different nodes throughout the network (In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960)).

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12. Applicant asserts on page 9:

Tschudin describes a method to provide confidentially without encryption, by introducing "chaff" (fake packets) into the true packet sequence (the "wheat"). These packets are introduced based on a pseudo random sequence, with this sequence known only to the sender and receiver. These packets are not tagged in a real sense, but identifiable via the pseudo random sequence (this could only be considered virtual tagging). Thus, Tschudin is not describing a technique where test information is added to a packet stream. Rather he describes a system where the packet stream itself is hidden in a new packet stream. Accordingly there is no teaching of the novel feature of the present patent application.

Tschudin states "this packet stream can be 'enriched' with fake or *unrelated packets*" (italics added) (p. 316, "Introduction"), which does not preclude the use of voice packets as the unrelated data. Furthermore, Tschudin states "[i]n our approach we also mark all data packets at the sender side with tags to let the intended receiver recognize that packets contain valid data," where the valid tagged data would correspond to the test data.

13. Applicant asserts on page 10:

Petitcolas, in general, also teaches information hiding, rather than the embedding of test data in the true signal. In the specific section quoted (pg 1067 section D) there is no mention of the test information. Accordingly the applicants believe the application is now in order for issue, and such action is solicited.

Petitcolas states: "The embedded data are the message that one wishes to send secretly. It is usually hidden in an innocuous message referred to as a cover text . . . or

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cover audio as appropriate" (p. 1063, §II, ¶2) The notion of "embedded data" does not preclude "test data."

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314

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Hand-delivered responses should be brought to:

Crystal Park II
2121 Crystal Drive
Arlington, VA.
Sixth Floor (Receptionist)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. V. Paul Harper whose telephone number is (703) 305-4197. The examiner can normally be reached on Monday through Friday from 8:00 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold, can be reached on (703) 305-4379. The fax phone number for the Technology Center 2600 is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service office whose telephone number is (703) 306-0377.

VPH/vph
September 4, 2002

Marsha D Banks-Harold
MARSHA D. BANKS-HAROLD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600